

Spatial Patterns of Rental Housing Disadvantage by Census Tracts, 2006

Maps of Eight Canadian Metropolitan Areas Using the NCRP's *Rental Housing Disadvantage Index*

Neighbourhood Change Research Partnership Richard Maaranen & David Hulchanski Draft for discussion. Do not cite or quote. Last revised: 27 March 2014

The Rental Housing Disadvantage Index (RHDI)

Index created for the NCRP by Richard Maaranen, NCRP Data Analyst, March 2014 Last revised: 30 March 2014

The RHDI is based on CMHC's conceptual definition and measurement of Core Housing Need. Core Housing Need (CHN) typically includes three measures: adequate, affordable and suitable housing. Conceptually, both the CMHC version of CHN and the RHDI index are based on these three measures but the measurement of CHN for RHDI differs from CMHC, primarily because we do not have access to the same level of detailed data. In addition to the three housing measures, the RHDI also includes average renter household income. The RHDI uses custom housing tenure data at the census tract level that was purchased by the NCRP under a previous SSHRC grant from Statistics Canada. Specific details are provided below.

1. The NCRP's Rental Housing Disadvantage Index

The RHDI is comprised of four indicators given equal weight:

- 1. Adequate Housing: Percentage rental requiring major repairs.
- Affordable Housing: Percentage of renter households paying 50% or more of income on rent. This involves rent paid in the census year and the income from the previous calendar year.
- 3. Suitable Housing: Average number of persons per bedroom in rented dwellings.
- Income: Average renter household income in dollars. This is income for the calendar year prior to the census year.

These four basic indicators are general enough to make the index applicable to all Canadian cities and for census tracts within these cities. This facilitates comparisons regardless of regional differences in the characteristics of the rental stock and is residents. The index can easily be expanded to include other indicators, depending on data availability.

To calculate the RHDI, each indicator is standardized, that is transformed to standard scores (commonly known as z-scores. The income variable has an extra step. Its standard scores are multiplied by negative one so that lower incomes contribute to a higher disadvantage measure in the index. The RHDI for each census tract is simply the mean of the four standardized indicators.

Standard scores are a dimensionless quantity obtained by subtracting the population mean from the individual raw score and dividing the difference by the population standard deviation. This is a necessary step because of the different metrics involved (dollars, ratio, percentage).

A standard score is the number of standard deviations an observation is above or below the mean. They have a mean of zero and a standard deviation of positive one or negative one. Positive scores are above the mean, negative values are below the mean.

An RHDI of zero means an average degree of disadvantage. An RHDI below zero indicates below average disadvantage (not to be misinterpreted as zero disadvantage). An RHDI above zero indicates above average disadvantage with values of 1.0 or higher indicating very high disadvantage.

2. CMHC's Definition of Core Housing Need

Source: http://cmhc.beyond2020.com/HiCODefinitions_EN.html

A household is said to be in Core Housing Need if its housing falls below at least one of the adequacy, affordability or suitability standards and it would have to spend 30% or more of its total before-tax income to pay the median rent of alternative local housing that is acceptable (meets all three housing standards).

- Adequate housing is reported by their residents as not requiring any major repairs.
- Affordable housing costs less than 30% of total before-tax household income.
- Suitable housing has enough bedrooms for the size and make-up of resident households, according to National Occupancy Standard (NOS) requirements.

A household is not in Core Housing Need if its housing meets all of the adequacy, suitability and affordability standards OR, if its housing does not meet one or more of these standards, but it has sufficient income to obtain alternative local housing that is acceptable (meets all three standards).

NOTE: Regardless of their circumstances, non-family households led by maintainers 15 to 29 years of age attending school full-time are considered to be in a transitional stage of life and therefore not in Core Housing Need.

3. Comparison of the RHDI with Core Housing Need

The RHDI was developed to identify areas with relatively high incidence of affordability, adequacy, suitability issues, as well as lower income, subjects that define Core Housing Need. Core Housing Need, however, is calculated at the individual household level and is not available for small geographic areas such as census tracts. The RHDI is calculated

for geographic areas such as census tracts, not household-by-household. The affordability and suitability parameters are calculated slightly differently than in Core Need. The income parameter captures general prevalence of low income, but not whether the specific households that have affordability, adequacy, suitability issues are low-income.

In summary, there are a number of differences between the RHDI and CMHC's Core Housing Need.

- The RHDI is a rating of the degree of disadvantage in rental housing with no minimum or maximum level. Unlike CHN, it is not a classification of how many and what share of rented dwellings / households are specifically disadvantaged. Such a determination would require more detailed custom cross-tabulated census data with indicators that have a common metric.
- The RHDI uses a higher cutoff of affordability, 50% of income spent on rent versus 30% for CHN. We believe that the 30% cutoff is too low as many renters are now paying this much without experiencing great hardship.
- 3. For suitability, Core Housing Need is a better index. Due to data constraints, the RHDI uses average number of persons per bedroom that fails to take into account family status and living arrangements. Generally, the RHDI is biased towards single people living alone (lower disadvantage) and against families (higher disadvantage). Despite this weakness in one of the four indicators the RHDI is still a useful measure of disadvantage in rental housing and the occupants of that housing.
- The RHDI does not exclude households led by maintainers age 15 to 29 years attending school full time. It is possible that areas with lots of university students

renting may be rated as highly disadvantaged. In CHN, these households are considered to be in a transitional stage of life and not in Core Housing Need.

4. Limitations of the RHDI

A general limitation of the RHDI, like other census-based research, concerns the reliability of the Census (a 20% random sample of households) in which responses are self-reported. There is possible misreporting in the components of the indicators: income, household size, number of bedrooms, monthly rent and need for major repairs. In particular, it should be noted that the tables and maps of the RHDI for this project are based on 2006 census data rather than the 2011 National Household Survey (NHS). Until demonstrated otherwise we have concerns about the reliability of the NHS.

Rental Housing Disadvantage Index 2006 in Eight Census Metropolitan Areas

Index only reported for those census tracts with 25% or more rental housing

Source: Statistics Canada, Census 2006, Custom Tabulation ED1790 Index developed by Richard Maaranen, Faculty of Social Work, University of Toronto.

CT Frequencies	1 1	Degree of Rei	ntal Housing	Disadvantage		- L	
CMA	Least < 0.01	Low 0.01 to 0.25	Moderate 0.26 to 0.50	High 0.51 to 1.00.	Most > 1.00	Total CTs	Mean RHDI
Halifax	15	13	7	11	3	49	0.22
Montréal	243	106	119	105	40	613	0.19
Ottawa - Gatineau	27	21	42	24	3	117	0.30
Toronto	131	79	104	149	17	480	0.29
Hamilton	12	24	22	21	2	81	0.35
Winnipeg	29	20	14	13	5	81	0.20
Calgary	21	29	19	14	0	83	0.22
Vancouver	66	73	43	36	6	224	0.20
Total CTs	544	365	370	373	76	1728	0.24

Column Percentages	1	Degree of Rea	ntal Housing	Disadvantage	e	
	Least	Low	Moderate	High	Most	Total
CMA	< 0.01	0.01 to 0.25	0.26 to 0.50	0.51 to 1.00	- 1.00	CTS
Halifax	2.8%	3.6%	1.9%	2.9%	3.9%	2.8%
Montréal	44.7%	29.0%	32.2%	28.2%	52.6%	35.5%
Ottawa - Gatineau	5.0%	5.8%	11.4%	6.4%	3.9%	6.8%
Toronto	24,1%	21.6%	28.1%	39.9%	22.4%	27.8%
Hamilton	2,2%	6.6%	5,9%	5.6%	2.6%	4.7%
Winnipeg	5,3%	5.5%	3.8%	3.5%	6.6%	4.7%
Calgary	3,9%	7.9%	5,1%	3.8%	0.0%	4.8%
Vancouver	12.1%	20.0%	11.6%	9.7%	7.9%	13.0%
Total CTs	100%	100%	100%	100%	100%	100%

Row Percentages		Degree of Ren	tal Housing	Disadvantage	3	
CMA	Least	Low 0.01 to 0.25	Moderate 0.26 to 0.50	High 0.51 to 1.00	Most	Total
Halifax	30,6%	26.5%	14.3%	22.4%	6.1%	100%
Montréal	39,6%	17.3%	19.4%	17.1%	6.5%	100%
Ottawa - Gatineau	23.1%	17.9%	35.9%	20.5%	2.6%	100%
Toronto	27.3%	16.5%	21.7%	31.0%	3.5%	100%
Hamilton	14.8%	29.6%	27.2%	25.9%	2.5%	100%
Winnipeg	35.8%	24.7%	17.3%	16.0%	6.2%	100%
Calgary	25.3%	34.9%	22,9%	16.9%	0.0%	100%
Vancouver	29.5%	32.6%	19.2%	16.1%	2.7%	100%
Total CTs	31.5%	21.1%	21.4%	21.6%	4.4%	100%

Degree of Rental Disadvantage in census tracts

Rental Housing Disadvantage Index Indicator Profile for Eight Census Metropolitan Areas, 2006

Source: Statistics Canada, Census 2006, Custom Tabulation EO1790

				with 25% or more rented housing						
Halifax CMA	Total Dwellings	Total Owned	Total Rented	Least < 0.01	Low 0.01 to 0,25	Moderate 0.26 to 0.50	High 0.51 to 1.00	Most :: 1.00		
Total Dwellings (#)	155,125	99,200	55,850	14,745	12,230	8,895	8,340	5,065		
Income: Household Average (\$)	\$66,325	\$82,682	\$37,270	\$44,940	\$36,696	\$32,111	\$32,090	\$31,063		
Affordability: Paying 50%+ of Income on Housing (%)	11.3%	5.2%	22.0%	16.3%	22.6%	22.7%	27.9%	31,1%		
Adequacy: Housing Needing Major Repairs (%)	6.8%	5.6%	9.0%	5.5%	9.0%	9.1%	12.8%	10.8%		
Suitability: Average Number of Persons Per Bedroom	0.92	0.87	1.06	1.00	1,02	1.03	1.07	1.25		

Montréal CMA	Total	Total	Total	Least	Low	Moderate	High	Most
	Dwellings	Owned	Rented	< 0.01	0.01 to 0.25	0.26 to 0.50	0.51 to 1.00	: 1,00
Total Dwellings (#)	1,525,745	813,405	711,435	230,895	111,030	123,880	115,280	58,865
Income: Household Average (\$)	\$63,038	\$85,209	\$37,682	\$41,628	\$37,324	\$35,587	\$33,453	\$31,042
Affordability: Paying 50%+ of Income on Housing (%)	11.7%	6.4%	17.8%	13.8%	17.1%	19.6%	21.8%	26.4%
Adequacy: Housing Needing Major Repairs (%)	7.7%	6.0%	9.7%	6.9%	9.6%	11.3%	13.0%	13.2%
Suitability: Average Number of Persons Per Bedroom	0.96	0.93	1.12	1.03	1.10	1.14	1.24	1.51

Ottawa - Gatineau CMA	Total	Total	Total	Least	Low	Moderate	Hìgh	Most
	Dwellings	Owned	Rented	< 0.01	0.01 to 0.25	0.26 to 0.50	0.51 to 1.00	>1.00
Total Dwellings (#)	449,300	299,840	148,690	20,625	18,385	46,850	29,800	4,855
Income: Household Average (\$)	\$80,838	\$99,683	\$42,861	\$50,638	\$43,797	\$39,387	\$37,420	\$30,618
Affordability: Paying 50%+ of Income on Housing (%)	9.5%	5.0%	18.7%	14.5%	17.5%	19.1%	22.3%	26.6%
Adequacy: Housing Needing Major Repairs (%)	6.5%	4.9%	9.8%	7.7%	10.3%	10.7%	10.3%	14.1%
Suitability: Average Number of Persons Per Bedroom	0.93	0.87	1.11	1.01	1.03	1.11	1.25	1.35

Toronto CMA	Total	Total	Total	Least	Low	Moderate	High	Most
	Dwellings	Owned	Rented	< 0.01	0.01 to 0.25	0.26 to 0.50	0.51 to 1.00	- 100
Total Dwellings (#)	1,801,255	1,216,205	584,130	104,885	78,020	108,900	156,775	24,635
Income: Household Average (\$)	\$87,820	\$107,748	\$46,296	\$57,413	\$47,851	\$43,033	\$38,193	\$34,042
Affordability: Paying 50%+ of Income on Housing (%)	14.7%	11.3%	22.0%	19.6%	21.8%	23.1%	23.4%	25.0%
Adequacy: Housing Needing Major Repairs (%)	6.0%	4.3%	9.5%	6.5%	7.5%	9.0%	12.8%	16,2%
Suitability: Average Number of Persons Per Bedroom	1.04	0.97	1.44	1.18	1.32	1.47	1.56	1.96

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Rental Housing Disadvantage Index Indicator Profile for Eight Census Metropolitan Areas, 2006

Source: Statistics Canada, Census 2006, Custom Tabulation EO1790

Hamilton CMA	Total Dwellings	Total Owned	Total Rented	Least < 0.01	Low	Moderate	High 0.51 to 1.00	Most .
Total Dwellings (#)	266,455	190,265	75,630	6,130	17,560	14,820	18,900	1,860
Income: Household Average (\$)	\$76,787	\$91,950	\$38,616	\$45,396	\$39,609	\$35,637	\$31,972	\$22,235
Affordability: Paying 50%+ of Income on Housing (%)	10.4%	6.7%	19.9%	15.6%	17.8%	20.7%	23.1%	20,4%
Adequacy: Housing Needing Major Repairs (%)	6.7%	4.9%	11.0%	6.7%	10.6%	10.6%	14.4%	12.9%
Suitability: Average Number of Persons Per Bedroom	0.96	0.90	1.11	1.02	1.10	1.15	1.22	1.42

Winnipeg CMA	Total Dwellings	Total Owned	Total Rented	Least	Low	Moderate	High	Mont > 1.00
Total Dwellings (#)	281,760	188,755		and the second second	Teles as steel	18,385	11,500	4,025
Income: Household Average (\$)	\$64,533	\$79,512	\$33,857	\$38,711	\$31,634	\$31,146	\$26,357	\$21,579
Affordability: Paying 50%+ of Income on Housing (%)	7.7%	4.3%	14.7%	11.8%	13.6%	16.5%	17.0%	22.5%
Adequacy: Housing Needing Major Repairs (%)	8.4%	7.6%	10.1%	6.4%	8.4%	10.3%	15.1%	17.5%
Suitability: Average Number of Persons Per Bedroom	0.96	0.90	1.19	1.08	1.18	1.26	1.35	1.43

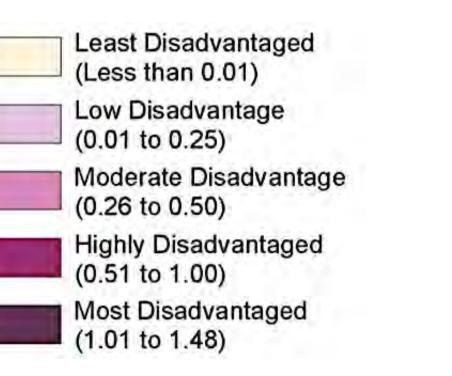
Calgary CMA	Total Dwellings	Total Owned	Total Rented	Least < 0.01	Low 0.01 to 0.25	Moderate	High 0.51 to 1.00	Most.
Total Dwellings (#)	415,605	307,315	107,685	14,525	29,790	16,465	22,215	0
Income: Household Average (\$)	\$98,253	\$115,629	\$48,689	\$49,157	\$44,355	\$44,394	\$47,786	-
Affordability: Paying 50%+ of Income on Housing (%)	9.3%	6.8%	16.7%	13.0%	15.4%	18.9%	18.0%	
Adequacy: Housing Needing Major Repairs (%)	4.8%	3.6%	8.5%	6.6%	8.8%	10.1%	8.9%	1.14
Suitability: Average Number of Persons Per Bedroom	0.90	0.84	1.05	0.94	1.00	1.06	1.26	

Vancouver CMA	Total	Total	Total	Least	Low	Moderate	High	Mast
	Dwellings	Owned	Rented	< 0.01	0.01 to 0,25	0.26 to 0.50	0.51 to 1.00	> 1.00
Total Owellings (#)	817,230	530,700	285,045	54,695	66,580	49,590	48,745	11,280
Income: Household Average (\$)	\$73,258	\$88,453	\$44,919	\$51,829	\$44,347	\$42,596	\$36,325	\$24,753
Affordability: Paying 50%+ of Income on Housing (%)	15.5%	11.8%	22.4%	18.2%	21.5%	25.2%	24.9%	30.9%
Adequacy: Housing Needing Major Repairs (%)	6.8%	5.8%	8.6%	6.8%	8.3%	8.5%	10.3%	10.8%
Suitability: Average Number of Persons Per Bedroom	1.00	0.90	1.31	1.24	1.30	1.39	1.56	2.03

Rental Housing Disadvantage Index Indicator Profile for Eight Census Metropolitan Areas, 2006

Source: Statistics Canada, Census 2006, Custom Tabulation EO1790

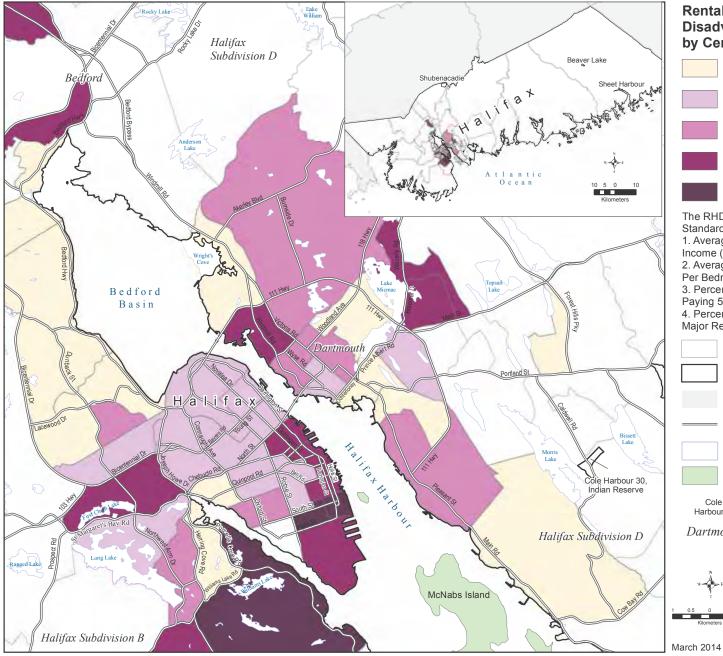
				Deg		Disadvantag or more rente		racts
Grand Total for 8 CMAs	Total Dwellings	Total Owned	Total Rented	Least < 0,01	Low 0.01 to 0.25	Moderate 0.26 to 0.50	High 0.51 to 1.00	Most
Total Dwellings (#)	5,712,475	3,645,685	2,060,915	470,310	349,155	387,785	411,555	110,585
Income: Household Average (\$)	\$77,081	\$96,943	\$41,925	\$46,968	\$41,796	\$39,119	\$36,366	\$30,559
Affordability: Paying 50%+ of Income on Housing (%)	12.6%	8.6%	19.7%	15.6%	18.9%	21.2%	22.6%	26.5%
Adequacy: Housing Needing Major Repairs (%)	6.7%	5.1%	9.5%	6.8%	8.8%	10.1%	12.3%	13.7%
Suitability: Average Number of Persons Per Bedroom	0.98	0.92	1.23	1.09	1.18	1.26	1.40	1.64

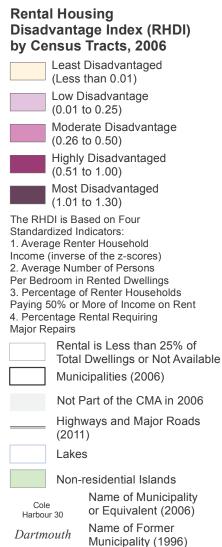


Rental Housing Disadvantage Index

MAPS, 8 CMAs RHDI IN 5 GRADATIONS

Rental Housing Disadvantage Index, Halifax Census Metropolitan Area, 2006



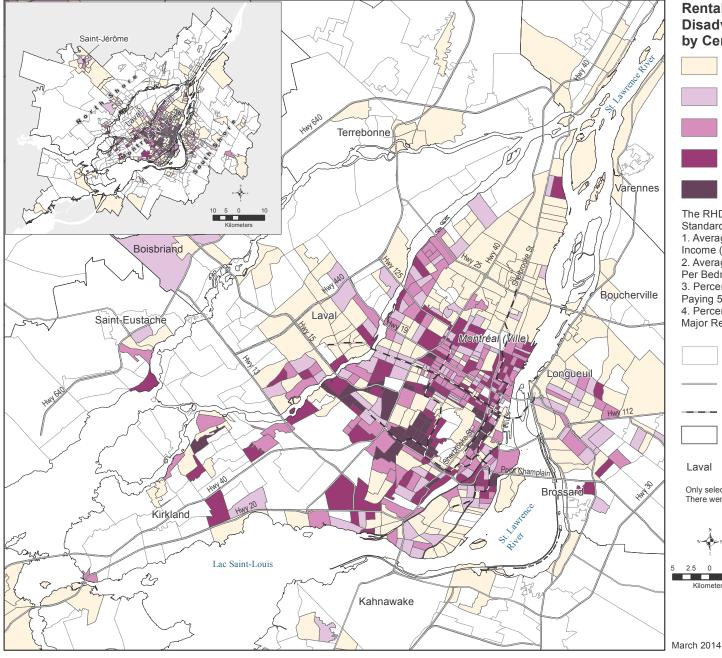


Source: (1) Statistics Canada, Census 2006, Custom Tabulation EO1790 (2) Statistics Canada, Census Road Network, 2011

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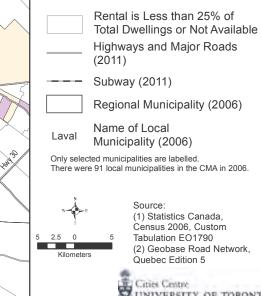
Rental Housing Disadvantage Index, Montréal Census Metropolitan Area, 2006



Rental Housing Disadvantage Index (RHDI) by Census Tracts, 2006



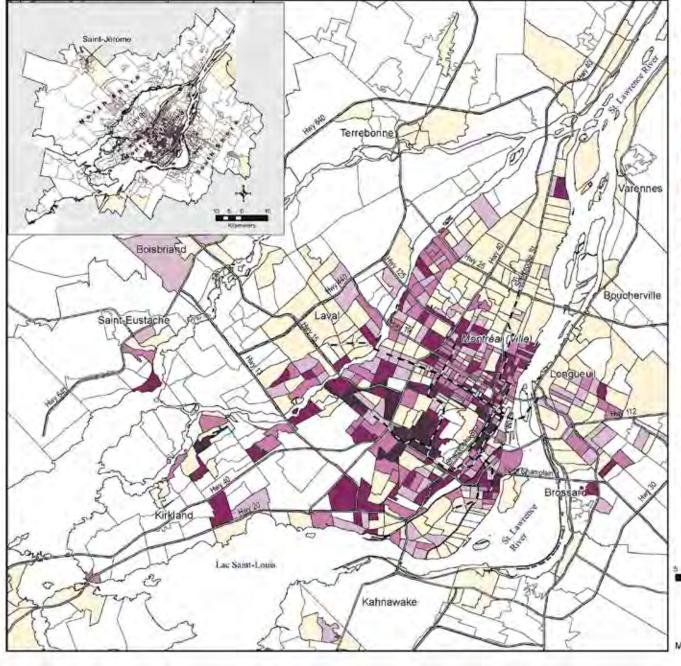
Per Bedroom in Rented Dwellings 3. Percentage of Renter Households Paying 50% or More of Income on Rent 4. Percentage Rental Requiring Major Repairs



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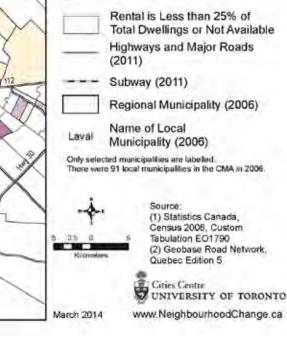
Rental Housing Disadvantage Index, Montréal Census Metropolitan Area, 2006



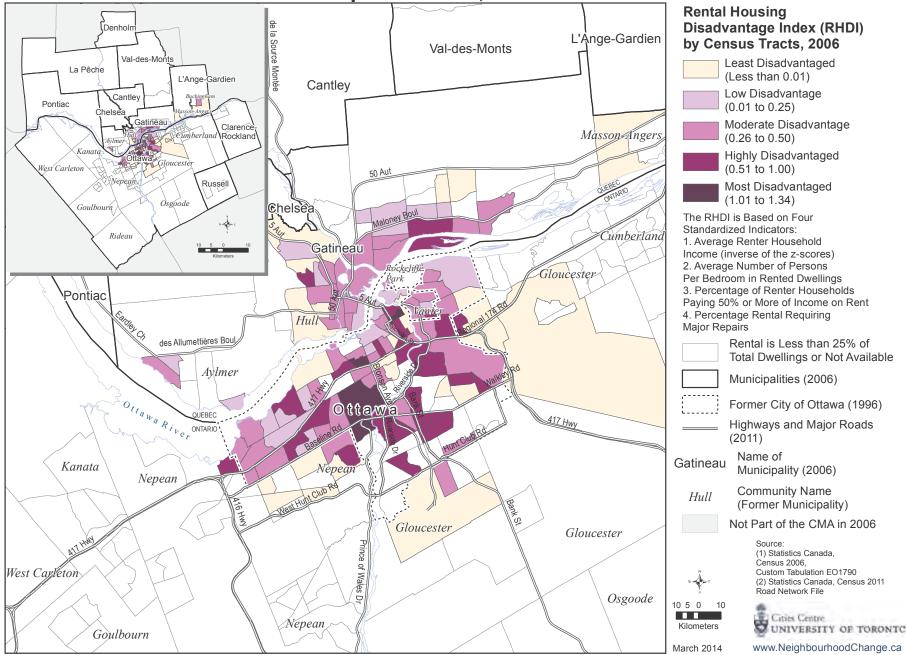
Rental Housing Disadvantage Index (RHDI) by Census Tracts, 2006 Least Disadvantaged (Less than 0.01) Low Disadvantage (0.01 to 0.25) Moderate Disadvantage (0.26 to 0.50) Highly Disadvantaged

(0.51 to 1.00) Most Disadvantaged (1.01 to 2.50)

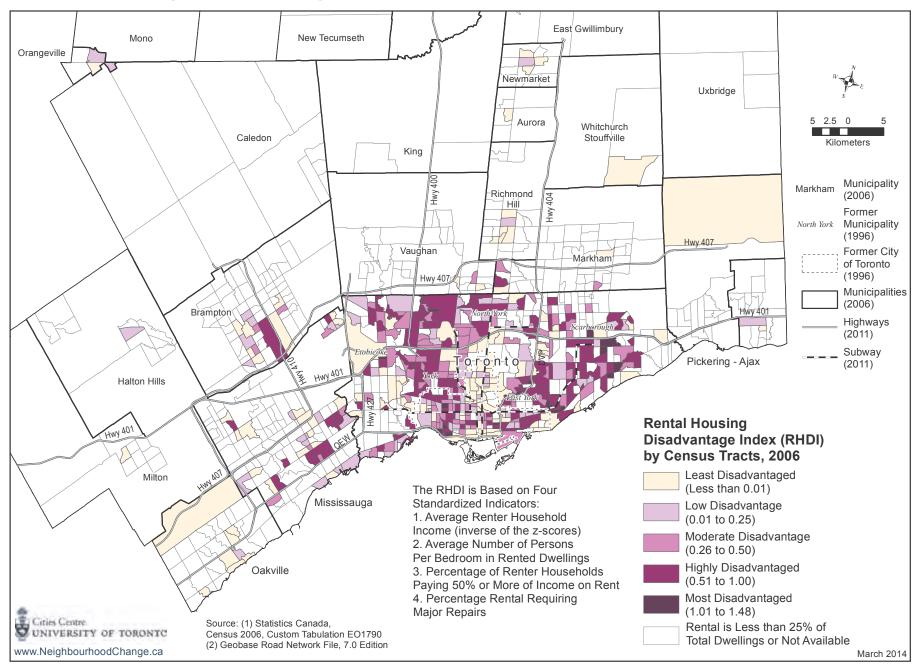
The RHDI is Based on Four Standardized Indicators: 1 Average Renter Household Income (inverse of the z-scores) 2 Average Number of Persons Per Bedroom in Rented Dwellings 3 Percentage of Renter Households Paying 50% or More of Income on Rent 4 Percentage Rental Requiring Major Repairs



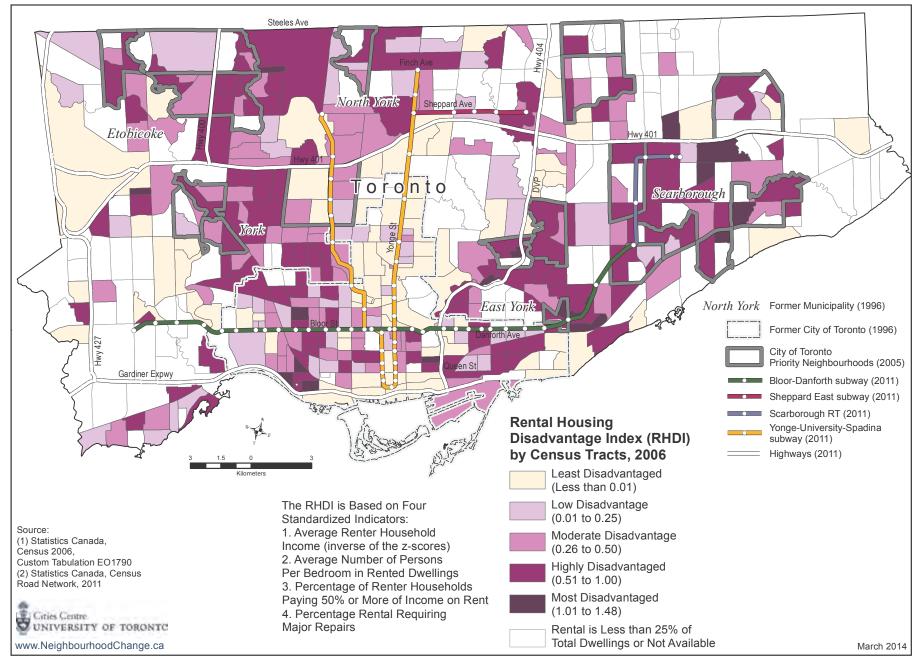
Rental Housing Disadvantage Index, Ottawa - Gatineau Census Metropolitan Area, 2006



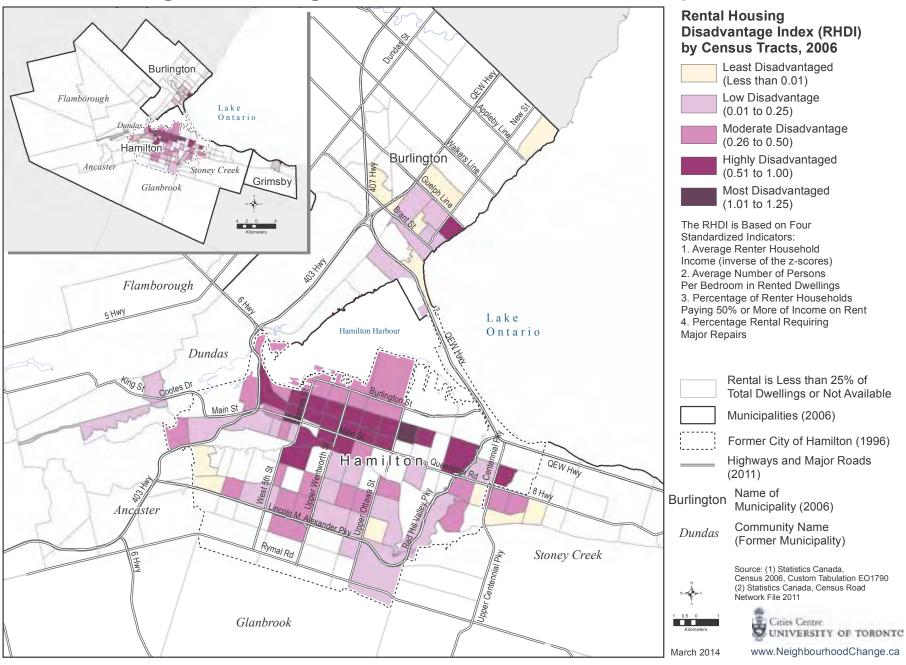
Rental Housing Disadvantage Index, Toronto Census Metropolitan Area, 2006



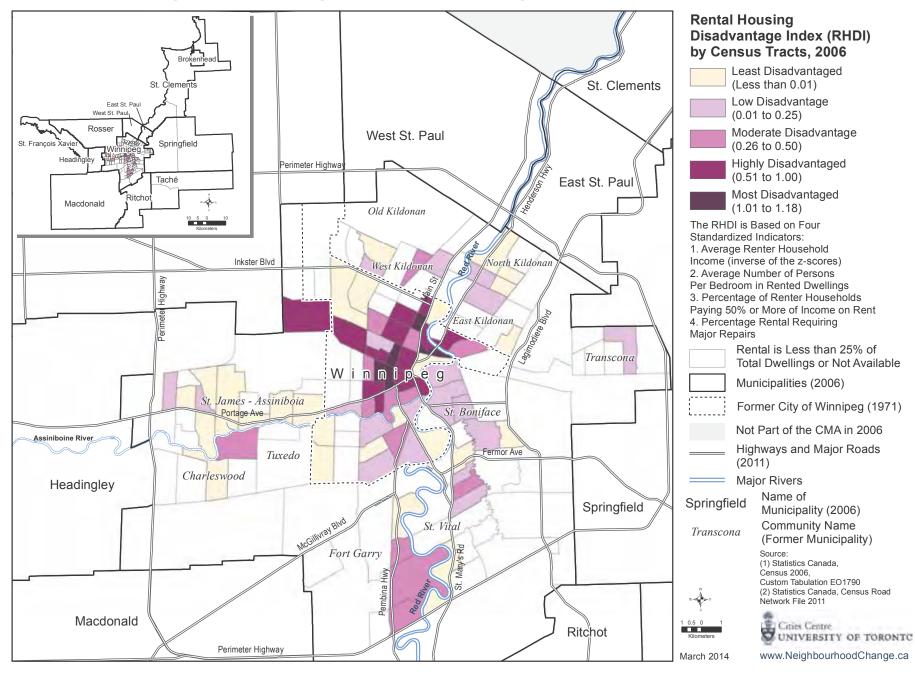
Rental Housing Disadvantage Index, City of Toronto, 2006



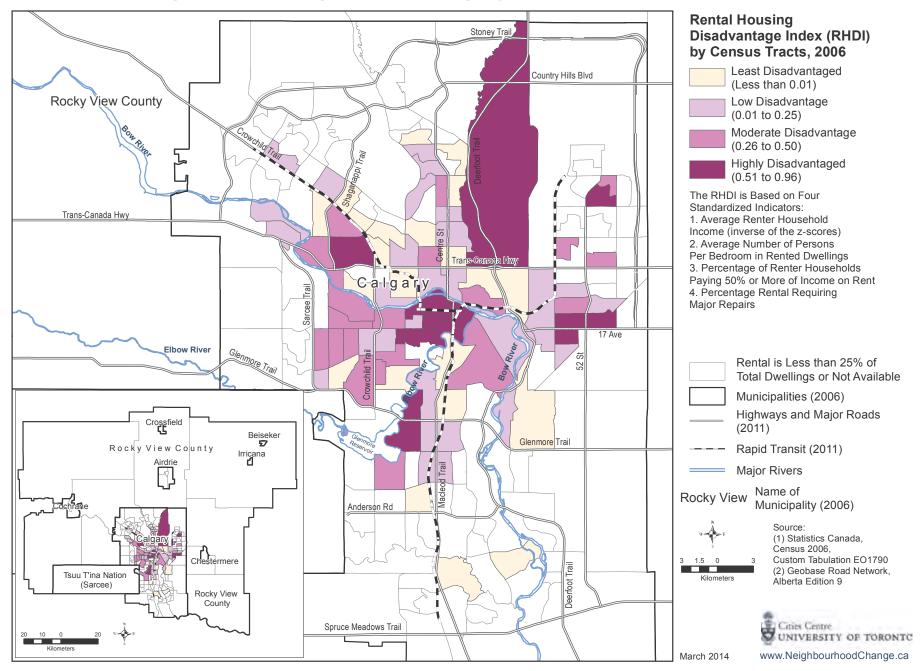
Rental Housing Disadvantage Index, Hamilton Census Metropolitan Area, 2006



Rental Housing Disadvantage Index, Winnipeg Census Metropolitan Area, 2006



Rental Housing Disadvantage Index, Calgary Census Metropolitan Area, 2006



Rental Housing Disadvantage Index, Vancouver Census Metropolitan Area, 2006

